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CLAIMS

What is claimed is:

1. A micro-mirror structure comprising:
 - a substrate having a first surface;
 - a deflection electrode formed at least partially on the first surface of the substrate;
 - a support structure connected at least partially to the first surface of the substrate; and
 - a deflectable element supported by the support structure.
2. The micro-mirror structure of claim 1 wherein the deflection electrode and the deflectable element are of the same polarity of charge and the deflectable element is deflected away from the transparent substrate.
3. The micro-mirror structure of claim 1 wherein the deflection electrode and the deflectable element are of opposite polarity of charge and the deflectable element is deflected towards the transparent substrate.

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4. A cell structure for a spatial light modulator comprising:
 - a first substrate having a first surface;
 - a first deflection electrode formed at least partially on the first surface of the first substrate;
 - a deflectable element connected to the first surface of the first substrate and registered with the first deflection electrode;
 - a second substrate assembled and spaced opposite the first surface of the first substrate, the second substrate having formed therein a second deflection electrode registered with the deflectable element.
5. The cell structure of claim 4 wherein the first deflection electrode and the deflectable element are of the same polarity of charge and the deflectable element is deflected away from the first deflection electrode.
6. The cell structure of claim 4 wherein the first deflection electrode and the deflectable element are of opposite polarity of charge and the deflectable element is deflected towards the first deflection electrode.
7. The cell structure of claim 4 wherein the first substrate is a transparent substrate.

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8. The cell structure of claim 7 wherein the first deflection electrode is a transparent electrode.

9. The cell structure of claim 4 wherein the second substrate is a transparent substrate.

10. The cell structure of claim 9 wherein the second deflection electrode is a transparent electrode.

11. A method for fabricating a deformable mirror device comprising:

providing:

a first substrate having formed therein a first deflection electrode;

a second substrate having formed therein a second deflection electrode, where one of the first substrate and the second substrate has formed thereupon a deformable mirror structure; and

assembling the first substrate to and spaced from the second substrate such that:

the first deflection electrode is registered with and separated from the second deflection electrode; and

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a deformable mirror within the deformable mirror structure is interposed between, registered with and separated from both the first deflection electrode and the second deflection electrode.

12. The method of claim 11 wherein the deformable mirror structure is formed upon the first substrate.

13. The method of claim 11 wherein the deformable mirror structure is formed upon the transparent second substrate.

14. The method of claim 11 wherein the second deflection electrode is a transparent electrode.

15. A method for operating a deformable mirror device comprising:
providing a deformable mirror device comprising:

a first substrate having formed therein a first deflection electrode;

a second transparent substrate having formed therein a second deflection electrode, the first substrate being assembled to and separated from the second substrate such that the first deflection electrode is registered with and separated from the second deflection electrode; and

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a deformable mirror structure formed upon one of the first substrate and the second substrate, a deformable mirror within the deformable mirror structure being interposed between, registered with and separated from both the first deflection electrode and the second deflection electrode; and

imposing upon the first deflection electrode, the second deflection electrode and the deformable mirror a series of voltages of polarity and magnitude such as to deform the deformable mirror towards the first deflection electrode or the second deflection electrode.

16. The method of claim 15 wherein the deformable mirror structure is formed upon the first substrate.

17. The method of claim 15 wherein the deformable mirror structure is formed upon the transparent second substrate.

18. The method of claim 15 wherein the second electrode is a transparent electrode.

19. The method of claim 15 wherein the deformable mirror is deformed towards the first electrode.

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20. The method of claim 15 wherein the deformable mirror is deformed towards the second electrode.